



# cq-tv

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Gt. Baddow, Essex.

## Editorial



Your answers to the Questionnaire sent out with the last edition made interesting reading. The general trend confirmed our own policy more or less. Thus, amongst general Club activities, the publication of booklets is head of the preferred list, with meetings, films and tapes in that order. In CQ-TV, after the technical articles, Other Blokeisms, Photos, Beginners pages, advertisements, Short notes and Editorials come in that order, roughly as we have had them in recent editions. We regret that "Other Meetings" was ambiguous, and "Advertisements" could have been taken to mean Private as well as Trade advertising. Of the dislikes, technical series, test cards and advertisements were a dead heat, but very few members expressed any dislikes.

The suggestions were very useful, and included: articles on aerials, optics, complete TV systems rather than bits at a time (in hand), clamping and restoring (in hand), a complete camera chain, camera tubes and circuits for same; a "Can You Help?" column (send in your queries), a glossary of terms (covered in any standard textbook?) and a Stop Press column for Club news, etc (not possible owing to method of preparation of the magazine). We must re-assure one member that Private Advertisements are accepted free of charge as a service to members, and another that specific enquiries on staticons, colour, monoscopes, etc are already dealt with by particular Club members or officials. The technical series cause some heartburn due to the non-sequential presentation of the items. This is usually due to the fact that only certain parts have been tried and tested completely, and that the meat of the subject, we feel, should be presented as soon as possible. The introductory pages and background can be dealt with when the subject is reprinted as a whole (see later).

Other points noted: "Quite happy..."; "Not too many advertisements except for financial reasons"; "more detailed articles - they save me time..."; "too flippant at times"; "tighten up on technical accuracy"; "more circuits"; "some designs that give reliability rather than economy in parts"; and "Don't forget its only a hobby with us!".

We intend to proceed much as before, then. But we cannot print more circuits unless you send them in, and most of you will not send them in because you are not 100% satisfied with them. Never mind - any information is better than none, but if you can stick to BATC standards it makes things easier for the others! Likewise photos - send them in and we will print them ( $4\frac{1}{4} \times 3\frac{1}{4}$  preferred, glossy). We shall print two editions of CQ-TV with our own covers and two with pre-printed covers per year, and we

G3CVO



### CHANGE OF EDITORSHIP

Mr. L.A.F. Stockley, G3EKE, is prepared to act provisionally as London Editor of CQ-TV, in addition to his duties as Hon. Treasurer. The reason for the change is that G3CVO and family are emigrating to Canada by November 7th next at the latest. G3CVO will contribute four pages of CQ-TV from Montreal, including items for 525 and 625 line members and news from North America, whilst G3EKE will do the Other Blokeisms, Club News - in fact the outside 4 pages of CQ-TV - and will look after the printing and despatch.

If anyone has a typewriter with a typeface that matches this (Imperial Good Companion), G3EKE will be very pleased to borrow it, or even purchase it if the price is very low.

hope to produce one complete booklet per year, as from 1958 when "Television Modulators" will be issued to members. It is difficult to know what to print to suit all members, but in general we work on the principle that if it is to do with receivers, or is something that is available in the standard textbooks, it is left out. There is so little written about ATV that we feel we should concentrate effort on the essentials first, and leave you to use the reading lists.

On Page Five is given the information enabling you to build a BATC standard sync generator. This is one of a series of items required at all ATV stations, and each will be carefully tested and tried before publication. Nevertheless, some snags may arise that we have overlooked, so we should be very grateful for your comments, and suggestions for future improvements. The next instalment in this series will deal with genlocking this generator to an external source such as the BBC.

And now what about some of your circuits?

M. Barlow.

### THIS MONTH'S BATC WRINKLE

Anything you can do with a pentode you can do with a double triode - if you think for long enough.

When writing articles for other journals, how about asking for 400 reprints to be sent out with CQ-TV?

## A SCREEN GRID MODULATOR

Screen-grid modulation of TV transmitters is not very common, but is employed by both ZL1QS/T and G3KBA/T. The circuit shows the former's unit, which is modulating the screen of a QQV06/40 on 97Mc/s. Somewhat more RF output can be obtained from the transmitter when it is modulated in this way, compared with grid modulation.

A positive-going composite video signal is applied to the grid of V1, an EL83. The input is about 3 volts peak-peak, and is stretched in the syncs until a 70:30 output is obtained from the RF probe. The output of V1 is clamped by the two diodes which are fed with back porch clamping pulses of about 5usecs duration and 20V amplitude. If the input signal has a distorted back porch, then line syncs can be used instead to give a sync tip clamp, but it will then be necessary to reset the Black Level controls. VR1 is a fine adjustment, VR2 a coarse. Each serves to adjust the anode potential of V3, an EF55 (6AG7, EL84 etc) and hence the current through, and voltage drop across V4. A small peaking coil is used in the anode of V3 to maintain the frequency response, and the 807 is well stoppered to prevent oscillation. The anode of the 807 is fed with 700volts - one snag with this system - and its cathode is at about 250V, depending on the input signal and Black Level settings. It is advisable therefore to feed the heaters of the 807 from a separate LT supply, and this should be from a low capacity TV set replacement type transformer. Coupling to the PA screen is via an OA2 150 volt neon, bypassed with an 0.1 mfd to keep the impedance constant with frequency; this acts as the Heising dropper, without which 100% modulation cannot be achieved. The screen of the PA is thus at about +100 volts, and from this point a resistive feedback network is taken to the cathode of V1. This serves the dual purpose of improving the linearity of the modulator and of keeping the neon alight.

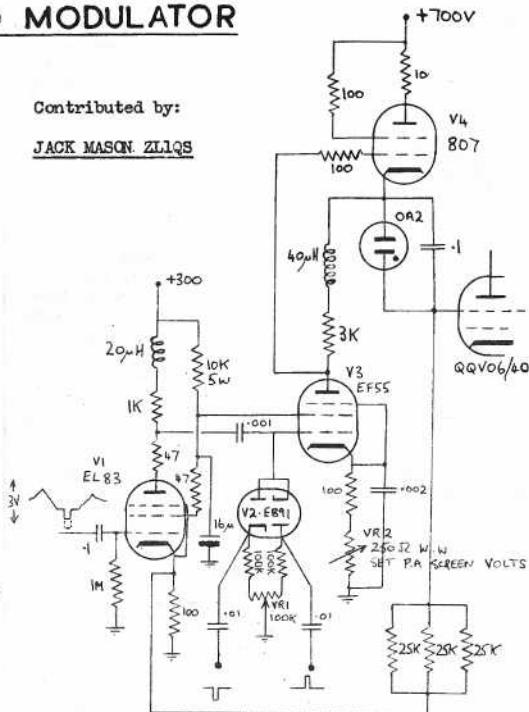
### TELEVISION SOCIETY EXHIBITION

This year's Television Society Exhibition had very little to interest the amateur TV enthusiast. There was not a single mention or photo of G3CTS/T, which was very surprising as the station has just started regular transmissions and could no doubt do with some publicity. One item of interest was a sync generator, plus Band I RF distribution, using 21 OCT1 18 0045 and two RCA RF transistors. Including the power supply (13.5V @ 30mA from a battery) the whole thing was in a case about 8"x4"x5", and appeared to be quite stable.

The colour demonstrations were interesting mainly for showing that quite good entertainment pictures could be received even when the colour sets were very far out of adjustment. Slides and colour bars were demonstrated, the latter being rather a fraud as a black bar was placed between each colour! On at least one oscilloscope the colour burst continued right through both porches and sync bottom. Most of the rest of the exhibition was devoted to testgear, mainly very expensive, but of course this show is intended for the professional TV engineer.

Contributed by:

JACK MASON ZL1QS

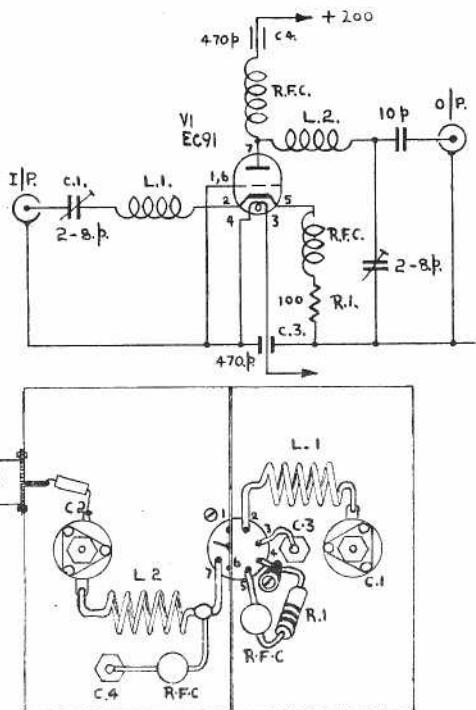


Jack Mason doesn't give any figures for the performance, but judging by reports, it is quite satisfactory in use. For negative modulation readers, the same circuit can be used with a negative input, provided the Black Level controls are reset. Reference: "Shunt Regulated Amplifiers" V.J.Cooper, Wireless Engineer, 1951, 28, P132.



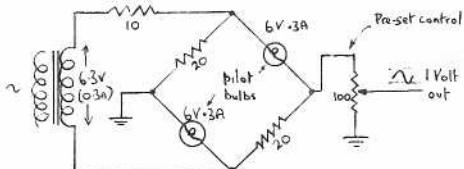
**BIG STUFF** Brian Partridge G3KOK/T operates the image orthicon camera at the 1956 Convention. The lens hood was an afterthought - and that tripod head cost 10/- scrap!

## USEFUL CIRCUITS



One of the most difficult things to do with the average BATC C.R.O is to measure a 1 volt p-p signal accurately. The simplest is to make a resistive potential divider and to wire it across the heater line. 6.3V rms = 17.9V p-p, so we need an 18:1 divider to get 1V p-p. A 25K and a 1.8K resistor are near enough, but check them first on an ohmmeter if they are more than 5% tolerance.

Unfortunately the simple idea suffers if the heater line is not 6.3V, and in practice in amateur equipment it rarely is. A better scheme is the bridge shown, which when once set correctly will give a constant output for quite a variation in input volts. Unfortunately one side of the input cannot be earthed, and this may mean a special 6V supply just for this item.



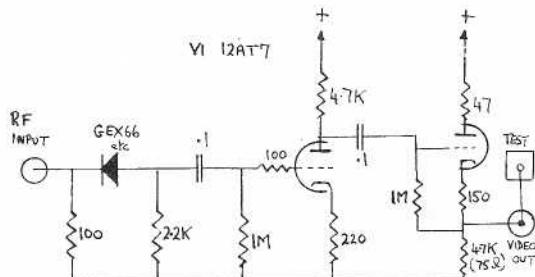
We shall be very pleased to print your own suggestions for the solution of the problem.

At a meeting of the Chelmsford BATC group, Fred Turner G3VI described a grounded grid RF stage for a 70cm converter using the cheap EC91 rather than expensive types such as the 6AM4, DET22 etc. This amplifier gives a gain of 12db at 445Mc/s, with a noise figure of 10.5db, compared with 10db for an AL714 planar triode.

The valveholder (ceramic or PTFE) is mounted in a copper or brass box, with a close fitting screen going right across it, soldered all along the edges. Some improvement is possible by raising the holder on a brass ring so that the earthy pins are level with the chassis. Both input and output circuits are pi networks, the coils being  $1\frac{1}{2}$  turns of  $\frac{1}{4}$ " wide brass or copper strip  $\frac{3}{8}$ " internal diameter and spaced about  $3/16$ " between turns. (The drawing is not correct in the coil details). Silver plating helps a little, but is not essential. The trimmers should be soldered to chassis or to the back of the input socket as required. The RF chokes are 7 turns of 26swg enamelled wound on a  $\frac{1}{4}$ " diam former tapped 6BA and screwed to the chassis. A filament choke has not been found necessary.

The amplifier is quite broadband, and no difficulty should be experienced provided those grid leads are REALLY SHORT to earth. Don't expect too much, though; you are only increasing the signal/noise ratio by 2 db - and you could get 3 db by doubling the size of the aerial. In some cases though, the better matching obtained by the adjustable pi circuits will improve the overall performance more than the 2 db mentioned.

Billed as the "Smallest Amateur TV Receiver", this little unit mounts on a 2" sq chassis  $1\frac{1}{2}$ " deep. It is basically an untuned O-V-I, consisting of crystal detector, triode amplifier and cathode follower. The BATC standard 1 volt of video can be obtained provided the RF input is high enough. Within a few feet of the transmitter or aerial, a simple dipole is adequate, but beyond that a high gain aerial directed at the transmitting array is recommended. The only selective circuit involved is the aerial, so position the unit with care relative to sound transmitters and the like.



Without the crystal and its load, the amplifier is very suitable for use with the feeder probe described in Edition 30.

# THE BATC SYNC GENERATOR

By G3CVO.

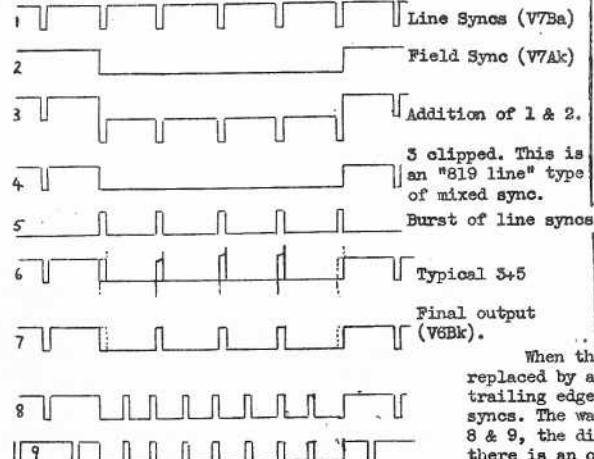
## A COMPLETE PULSE GENERATOR FOR ANY NUMBER OF LINES

The BATC standard waveform unit consists of four 15" x 2" panels bolted together as one 8" panel. The individual panels are:

1. The Timer chassis - containing counter chain, AFC circuits, monitor CRO and gen-lock circuit.
2. The Shaper chassis - generating line and field syncs and blanking, and capable of running as a non-interlaced complete sync generator on its own.
3. The Vision-Sync-Blanking mixer - to produce the composite waveform.
4. The test waveform generator - for producing bars, spikes, sawteeth, etc.

Of these panels, Nos. 3 and 4 have already been described in CQ-TV (editions 28 and 26 respectively). No. 1 is only required in its entirety if it is desired to use an interlaced system of scanning; as this is a doubtful requisite for amateur work, this unit will be left until last.

The shaper unit produces a complete mixed sync waveform, in addition to separate line and field syncs and mixed blanking. The mixed sync waveform is made up of line and field syncs in varying manners depending on the complexity of the equipment and the number of lines used. Since the receiver timebases must be able to distinguish between the line and field pulses, the former are made narrow (about 10% of the line period) and the latter long (several lines). Unfortunately, during these lines the line time base can get out of step, causing tearing at the top of the picture. One way out is to reduce the length of the field pulse to less than one line. This method is used in the 819 line system, where the field pulse is about half a line long. This requires the simplest possible sync generator, only two valves being required (See Fig 1).



Not all receivers will lock to this type of waveform, so that it is preferable to use the longer pulse. To keep the line timebase in order it is necessary to introduce some line information into the long pulse, and in this circuit another 1½ valves are used for this. When an interlace is required, these inserted pulses are provided by the timer unit, as in this case they must be at twice line frequency to allow the field pulse to start halfway along a line, so producing the interlace. 525 and 625 line systems have in addition further "equalising pulses" at twice line frequency before and after the field pulse, but these are quite unnecessary for amateur work, and it is recommended that the 405 line type of waveform be used however many lines are in fact in the picture.

A block diagram of the unit is shown in Figure 2 and the circuit in Figure 3. Only one control is fitted (Line Frequency), the field pulses being locked to the mains. Three outputs (Line Sync, Field Sync, Mixed Sync) are provided to give 1 volt across 75 ohms; mixed blanking is taken straight across the tagboards of the complete waveform unit. 7 12AT7s are used, including two for blanking; the unit is designed to be easily locked to the timer or to genlocking pulses.

The two basic valves required are V1 and V3. These are cathode coupled multivibrators running at line and field frequency, the latter locked to the mains. This type of multivibrator is used as it is easily converted

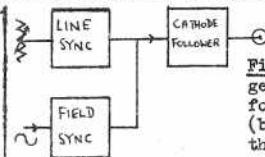
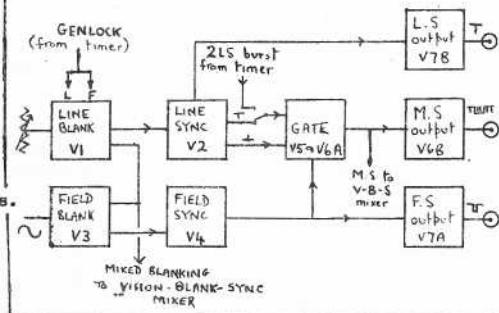


Fig. 1 (left) Simple sync generator giving a waveform as in Fig 2 - 4. (below) Block diagram of the complete unit.



When the timer unit is built, the burst of line syncs 5 is replaced by a burst of twice line frequency pulses, whose trailing edges are co-incident with the leading edges of line syncs. The waveforms for alternate fields are then as shown in 8 & 9, the displacement of the line syncs in 9 occurring since there is an odd number of lines per field.

Fig. 5

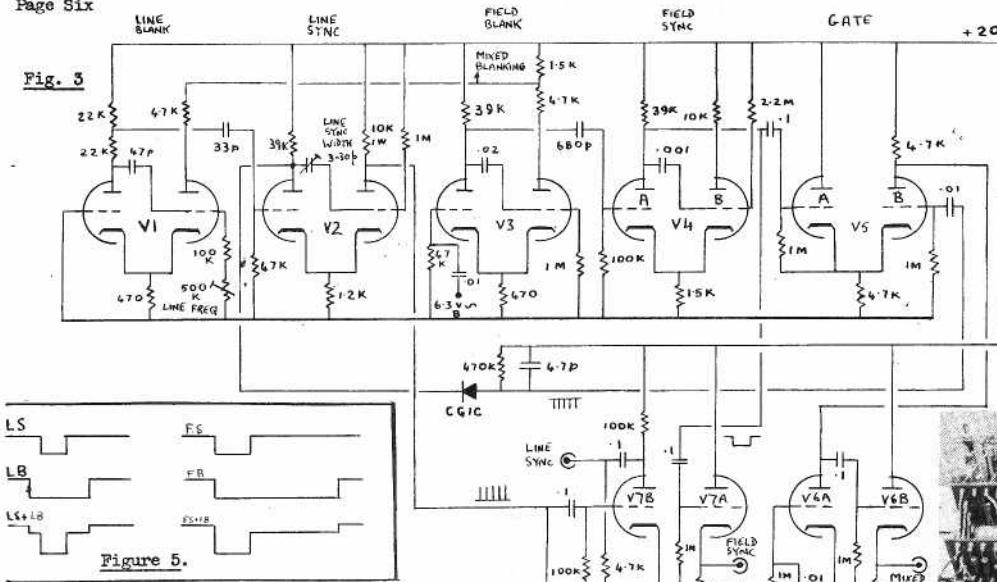


Figure 5.

to a triggered flip-flop when the timer is built. The pulses obtained are normally used for blanking, but for a simple unit they could be used for syncs by making the coupling condensers smaller. The outputs are mixed across a common 1.5K load, with 4.7K isolating resistors to the anodes to stop cross-triggering. With the line frequency set at about 10kc/s (15kc/s 525/625) the coupling condenser should be selected to give a pulse to space ratio of about 1:6 (all systems). Similarly the field blanking is set to about 1:15, taking care that the mains lock is maintained. It may be necessary to change valves, or to alter the 1K grid leak, or the cathode resistor, to obtain the correct conditions. (Unfortunately cathode-coupled multivibrators at high mark/space ratios tend to be touchy, especially with low level sine wave synchronisation. The large trigger pulses available from the genlock or timer units make things much easier).

The next two valves required are V2 and V4. These are triggered by V1 and V3 respectively, and generate the shorter sync pulses of approximately 1:10 (line) and 1:40 (field) mark/space ratio. Provided enough trigger pulse is arriving, the sync pulse will always be locked to the blanking - and correctly timed provided the trigger comes from the correct anode. The line trigger pulse is fed via a 33pF capacitor to the grid of V2; the input capacity of this stage slows up the rise of the trigger and delays the firing of the sync flip-flop, producing a front porch. This should be about 1/10th the width of the sync pulse. If sync and blanking are displayed together on the scope, they should appear as in Fig. 5. Note that there is no front porch at field frequency, since field timebases are less critical in timing.

In order to insert pulses in the broad field pulse V5 and half of V6 are used. Positive-going line sync pulses from V2 are fed into V6A and appear inverted across the common 4.7K anode load. V5A is normally conducting, so raising the cathode potential and

cutting off V5B. A negative field pulse from V4A cuts off V5A and allows V5B to add pulses across the load. When the timer is built, these pulses will be at twice line frequency, but in this simple case line pulses only will be used. They are not correctly timed, but serve to keep the line timebases running at correct speed during the field period. As the negative going line pulses from V2A are badly shaped, a diode clipper MRI is used to flatten their tips. It will be found that varying the capacitor across the 470K leak will vary the width of the inserted pulses, and these should be adjusted to be of equal width to the line sync pulses, and of equal amplitude at the output terminal. The waveform at the common anode is the sum of all these inputs, which is clipped in the output stage to look like Fig 2 - 7.

The mixed sync waveform is fed into a cathode follower V6B, which clips the negative ends of the pulses, so tidying the waveform to look like Fig 1. V7A is another cathode follower for the field syncs, whilst V7B is a phase reversing low impedance output stage for the line pulses. Note that this circuit can only be used for very narrow pulses. If separate sync outputs are not required, V7 can be unplugged to save power.

#### CONSTRUCTION

Precise constructional detail is not important, but the sketches show how each of the panels has been built by G3CVO. 16 swg aluminium is used for the chassis, which is drilled for the valveholders, potentiometer, co-ax sockets and test point sockets. A  $\frac{3}{8}$ " lip is now bent up, so that the overall width of the panel is  $2" + 0 - 1/16"$ . This lip faces the rear of the unit, and runs along the bottom of the panel giving rigidity and a support for the assembled tag-board. The lip must be cut back for at least an inch

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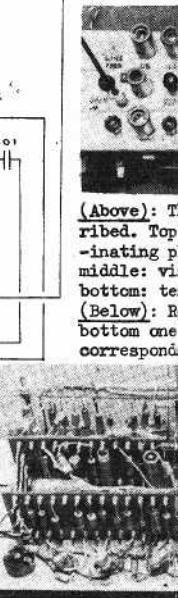
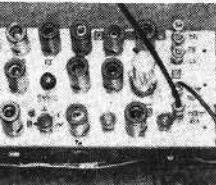


Fig. 4 (a) Rear view of the tagboard, showing connections.



the three units so far described - Sync Generator (note terminals in the output sockets); Ion-blanking-sync mixer; Waveform generator.

ar view of the units. The top is the sync generator, and to the drawing at the right.

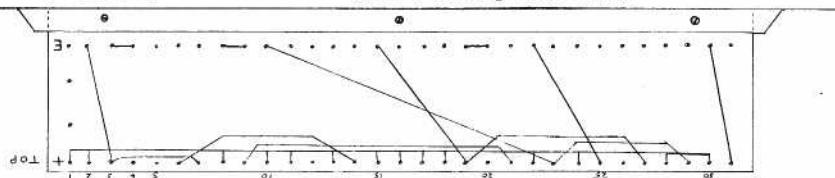
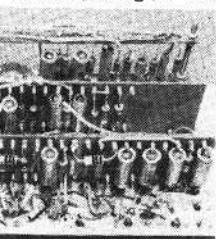
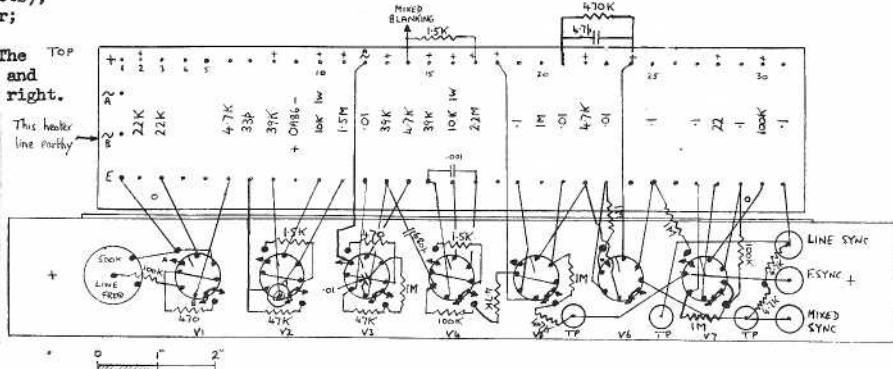


Fig. 4 (b) Sync generator wiring (see photo at left).



at each end to leave room for upright supporting members.

Any type of tagboard can be used. At G3CVO a piece of paxolin board 12" x 2 $\frac{1}{4}$ " x 3/32" has two rows of turret tags pressed into it at 3/8" centres, the two rows being 2" apart and offset so that the outer row is 1" from the long edge. All the components are mounted on the "inside", and the wiring is on the reverse. After wiring the valveholders, the board is secured to the lip by three or four 6BA screws. These may be countersunk to avoid overhanging the next panel but in fact if the next panel does not have a corresponding lip on the adjacent side no trouble will be experienced if standard cheesehead screws are used. A vertical row of tags is used at the end for HT and LT busbars to all four panels, these also acting to support the tagboards in case of accidental knocks. It is advised that the panels be completely wired and tested before they are screwed together, as access to the components, whilst adequate, is not always sufficient to ensure a neat job.

#### ALIGNMENT

Getting the unit to work is simplicity itself. Start with only V1 plugged in, and match the frequency to TV line frequency as received on a TV set, or match the audible whistles, etc. In most cases it will probably not be essential to be on just the right frequency anyway. Now obtain the correct pulse width by choice of coupling C, etc as already explained. Proceed to V2 and check that there is one sync pulse for every blanking pulse, and that they are correctly timed and of correct widths. V3 is treated as V1 - select the components to give a 50 cycle output and no other. If it is found that at 50 cycles the output

pulse is much too wide (indicating that the mains locking sinewave is holding the n/v open) increase the cathode resistor. V4 is now set to give one output pulse per blanking pulse, and to be approx one quarter the width of the blanking pulse. Insert V5 and check that at the output a burst of positive line pulses occurs during the field sync period. Temporarily disconnect the feed to V5B grid, and insert V6. Check that the output now consists of negative line pulses, with a negative displacement during field sync. At the actual mixed sync output socket, terminated in 75 ohms, a gap in the line pulses should appear during field sync. Now reconnect the feed to V5B and check that pulses appear in the field interval - they may be only very narrow spikes. Insert V7 and check all outputs for 1 volt level when terminated in 75 ohms. Note that not only will the amplitude be all wrong if the termination is forgotten, but so may the waveform itself as each output stage clips heavily. If there is hum on the output, check the HT rail, heater/cathode shorts, etc. Make sure the HT rail is free of spurious pulses, and that none of the stages is unintentionally oscillating. With the layout given, no trouble has been experienced. The HT rail should not exceed 210 volts, which may conveniently be obtained from two VR105s in series. A regulated supply is not essential. The current consumption is about 65mA, and the heater supply 2.1 amps.

If 12AU7s or 6SN7s or other valves are to be used, some of the time constant circuits may need to be reset. Proceed as above. If transistors are to be used, the redesign becomes very extensive, and will be considered in a later article.

## COLOUR CORNER

If you already have a working black-and-white TV camera, it is very easy to produce colour pictures of sufficient quality to encourage you to experiment further. This idea has been tried by the Chelmsford group, and the details have been provided by Jack Terry.

As will be seen from the diagram, camera and monitor are pointed in opposite directions, and are so mounted that the same colour disc rotates in front of each. The disc at Chelmsford is  $1\frac{1}{2}$ " in diameter (not critical) and is made of  $1/8$ " card. For simplicity the correct shape of colour sectors were not used, but instead 6 plain sectors were cut out, with a "spoke" of cardboard between each. The width of the spoke is about  $1/4$  the width of the colour windows, to reduce colour contamination due to incorrect phasing, wrong sector shape, etc. The sectors are covered with coloured gelatine, etc obtained from an Arts and Crafts shop. Primary red, green and blue should be used (Strand Electric nos. 6, 39 and 20 respectively), but at a pinch good results can be obtained with any R, G or B. The disc should be carefully made to obtain good mechanical balance. Jack uses a 12 pole 1/80 HP series wound brush type motor controlled by a variable resistor from the mains, and runs it up to 500RPM when it will be in synchronism with the mains.

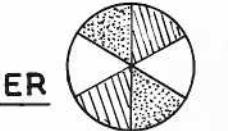
Since the disc is in front of the camera lens, it is necessary to reverse the field scan in the camera ONLY so that the edge of any colour sector follows the field scan. This means turning the test card upside down to get a right way up result on the monitor.

Care should be taken that the magnetic field from the motor does not upset camera or monitor, and that the peaks of signals are not clipped anywhere in the chain. A display on the CRO of three fields will show R,G,B in some order and help prevent this. Overdriving the monitor to give a negative picture will give the complimentary colours. About three times as much light as usual will be required on the scene. With 405 line standards, surprisingly good colours can be seen.

### VOORSCHOTEN

New member A.H.M. Lambriex, PaOLAM, with his 5527 camera at Voorschoten, Netherlands. He says that at his wife's insistence he is rebuilding in a neater state!

The camera has a PCC84 pre-amp, 2 E83F video amplifiers, and an ECC81 cathode follower. Two EF41 deflection amplifiers are also visible. The lens is a  $3\frac{1}{2}$ " f1.8 from an old cine projector. Also in the picture are the 625-line sync generator (lower left), and an R107 (rear); the 14" TV set has a built-in 145Mc/s converter. The transmitter (not shown) delivers about 25 watts to a folded dipole.



### BOOK REVIEW

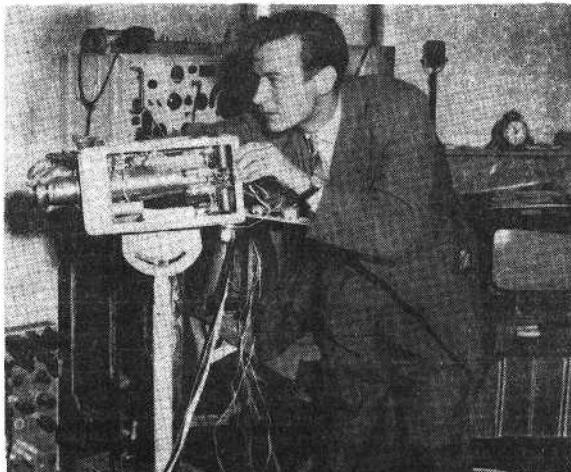
"Television Engineering" Volume III - Waveform Generation, by Amos and Birkinshaw. Published by Iliffe @ 30/-. 226 pages, 132 illustrations.

This is the third in this excellent series of volumes dealing with television. The subject matter covers the generation of sine waves, rectangular, sawtooth, parabolic waveforms; there are very clear explanations of the design and working of clippers, multivibrators, flip-flops, blocking oscillators, transistrons, phantastrons and the like, all well illustrated with suitable calculations.

Modern phraseology has been introduced ("fields" for "frames" etc), but a most unusual symbol is used for a gas triode, and the word "timing" is employed rather than "phasing" when dealing with pulses of the same frequency - which is rather ambiguous. Apart from two introductory chapters dealing with the types of waveforms required in TV systems, there is no association of the circuits with TV use. There is no mention of counter circuits, (although dividers are described), pulse mixers, or transistors, these being presumably left for Vol. IV.

For anyone wanting a clear insight into the operation of the above circuits, or wishing to design his own, this book is an absolute "must". Every BATO member should make every effort to read it and its fellows - borrow it from the public library if you cannot afford it. Highly recommended. M.B.

TELEQUIPMENT LTD have produced a grand little oscilloscope called the Serviscope, which is ideal for TV applications. Using a SW11 CRT it gives a bright trace even at 4cm/s/microsec; the amplifier is good from DC to 6Mc/s, and the triggering and sync is a vast improvement on all but the latest Tektronix scopes! Under test, we were able to view individual cycles of a colour subcarrier burst in the back porch (the burst being about 1" long) in the presence of line field and bumping picture information. Really worthwhile, this little scope costs £55 - a bit much for the amateur, unless a group buys one, but those of you in a position to influence the purchase of such things might bear it in mind.



The Birmingham TV Newsletter carried the following notes on conversion of the APS13 for use on 70cms.

"There are apparently two versions, one by RCA and one by GEC. The latter is easier to convert, and using simple Yagi arrays, quite good results have been obtained. The modifications required are:

1. Remove the last two tag strips from the IF strip, leaving five stages and T107.
2. Remove all other circuits and power supplies, leaving two valveholders for audio work, etc.
3. Remove R174 (heater to cathode of first IF); remove capacitor feeding screen of this tube and replace by 470 ohm resistor.
4. Remove modulating circuits from cathode of mixer.
5. Parallel all heaters using existing chokes.
6. The gain control is connected to the 5th IF stage and is left in circuit; the IF is 30Mc/s and the bandwidth about 4Mc/s. When connecting the detector, observe the phasing of the IFT. The power supplies required are 200V max HT, 6.3V heaters. The transmitter can be anode modulated. T113 and T114 are useful delay lines.



#### HIGH WYCOMBE

Sid Collins with the group's staticon camera which is mounted on a tripod made of broom handles. First pictures are expected soon.

#### AROUND THE CLUBS

HIGH WYCOMBE meet every Monday at Hayreed, Gallows Lane, Sands.

BIRMINGHAM meet on the second Wednesday at the White Swan Inn, Edmund St. The

group's camera proceeds, as do plans for the August Jamboree. CHELMSFORD were recently visited by the Cambridge group, but Sod's Law was invoked again: two fires, 3 EHT transformers lost, and 2 hrs taken to tune in G2WJ ("whilst we fix the studio...") were amongst the difficulties. Recent meetings have included a demonstration of Colour Television by Marconis, "TV Modulators", and "Transistor Sync Generators". Future meetings are on "3cm microwave link" and "A Monoscope Unit". Meetings are held on the second Thursday of the month, and also on 1960 kc/s on Sundays at 1100hrs.

ROMFORD have their meetings on the third Wednesday of the month. Recent lectures have been on "Television Studio Engineering", "The BATC Sync Generator" and "5527 and CPS cameras". April meeting: "Video Amplifiers". It is hoped to have four cameras at the Dagenham show, July 13-14th.

SOUTH LONDON meet on the first Friday. A series of instructional lectures is in hand, and the group hope to have a staticon soon.

Please let me have your lecture lists well in advance, with dates.

REFERENCE - building a staticon camera? There's a lot of good stuff in the March 1957 Electronic & Radio Engineer (ex-Wireless Engineer) by J. Attew: "Television Camera Channel Design". Peto-Scott studio job. Practical Television are crying out for TV articles; fair lolly too. Has anyone any spare projection tubes for viewfinder use?

A copy of the BATC Newsreel will cost £6 8p or £10 16p. Offers? Many thanks for "DL-QTC", "L.V.R.", J.TV Society, and "Outlook".

#### SHORT NOTES

GRANT DIXON points out that E.N.Bradley's "Electronic Novelties for the Constructor" (N.Price, 5/-) contains a complete description of a "Simple Home Television System" (FSS) using a VCR517c as a scanner, 931A and amplifier, and either VCR97 monitor or RF output to a domestic TV set. This would make a good article for the beginner in TV transmission.

Reference: Frequency Control in 300-1200Mc/s region; Fraser and Holmes. Proc IRE Nov 56. Details of cavity controlled oscillators etc.

The Club tape on "Television Scanning" is now in circulation - apply C.G.Dixon, 23 Wye St, Ross on Wye. "Pulse Generation" tape is in preparation. Could we please have your staticon circuits?

ERROR in the oscilloscope circuit in the last edition. As explained in the text, there should be a 1000pF capacitor from the sync amplifier anode to the time base valve screen.

ERRORS on that converter in the last issue:

R3 should be 5.6K not 560 ohms;

Pins 4 & 7 of the 6J6 should be joined, and pins 5 & 6, as shown on the circuit. SORRY!

FREE GIFT if you pay postage: 60cm radar gear including tx and rx plumbing and tubes, planar triodes, and complete IF strip. Ring MAYfair 1375 Lt.Col. Henn-Collins GCSZC 16 Berkeley St WL.

S/D chalet type HOUSE for sale part furnished. 2/3 recep 2/3 bed all services, garden is halfway on 80m clear by 50ft, garage wired for TV studio, co-ax in all rooms, aerial fittings all over walls, well trained garden, good road, 10 mins station, all buses nice neighborhood, near Chelmsford. Ideal newlyweds or prospective Marconi man. £2600 or haggle - G3CVO Eddie Barrall wishes to apologise to the BATC who wrote from Colchester to meet him - he's lost your name and address, but would like to meet you. Ted Pegram did the drawings in this edition. G3INY/T.



Brian Partridge G3KOK/T (L), Peter Allott G3KWD and Jack Terry with That Colour Wheel - see story Page Eight.

## WHAT THE OTHER CHAP IS DOING

Grant Dixon has built a new VSB mixer to the design in "An Industrial Television Channel" by Boddy and Gardner in the J.Tev.Soc Vol 7 No 2. In view of the great increase in colour activity, Grant is trying some experiments to see if ACTV standards cannot be brought more into line with B&W standards, eg 50 frames per sec rather than 100. Grant is particularly anxious to swap tapes on colour activities, and also much appreciates recordings of lectures. Vic Cedar is pressing on with a staticon camera, and should have something to show by the end of April. He keeps stopping to improve the design of earlier bits!

J.M.Cordova QN2AO (Tangier) has a closed circuit chain running using an RCA QRV59AAE (airborne?) camera, and will be sending photos soon. Eddie Roberts VK9AT (New Guinea) is building mobile gear on the lines of the Pye industrial gear, and has started on the BATC sync generator. He hopes for 15m contacts with other BATCs. C.A.Rouse (Auckland) writes that the boys there did a fortnight show, each day's transmissions lasting some hours and including film and live stuff. Two cameras were used, and seven receivers, with video distribution; the equipment is to be taken round all the big towns to stimulate TV interest in NZ.

Mike Powell is with the RAF at Boscombe Down, and has 4 industrial TV chains to look after! He is exploring the telerecording field too. Simon Freeman (Dedham) has altered his sync generator to the BATC one, and is improving the counters. John Flownan G3AST has been appointed chief engineer (electronic) to an aircraft firm in Yeovil, and is MOST anxious to meet BATCs in the area. He has taken all his gear with him, but it will be a few weeks before he is operational again. One chap near him is Eric Lawley, at RAF Locking. Eric has finished the monitor and vision mixer, and has most extensive HiFi recording facilities. He bought a complete sync gen from Clynes for £5 - no more left!

John Jull says the Cambridge crew are very active the new camera is complete; it has a 5" mgte viewfinder, scan failure protection, cue lights and full talkback. Under construction are a dolly, audio mixer, talkback control and a G8SK transmitter. A 15" rack mounted sync generator will follow. Matilda is laid up at the moment, but may possibly be active in time for the Dagenham Show. Gordon Sharpley is now G3LIES and will add the /T when he gets on 70cms. He has a pair of 723A/Bs and wants the gen from P.Burridge on How to Use Them. P.K.Jones (W.Hampstead) has a sync generator built, and is receiving the BBC NTSC colour pictures on a field sequential projection rx. (So are Ian Waters, Iwan Howard and Jack Terry). Harry Grinbergen PAOLQ is getting 20W of RF on 70cms for 35W input to the QQV06/40 in the new rig (details next issue), and has a 5ft square broadside aerial. OM Storm at the Hague has a slide scanner using the usual 931A - 5FPT. Martin Lilley (Romford) has had results from his, which uses two MW13-22 tubes. John Tanner at Chelmsford built the Partridge converter, and has received good pictures from G3CVO/T with it (2 miles!). John has a vidicon and is to build a camera when the monitor is 100%.

The 1955 Convention Newsreel tape has just come back home with a variety of comments and some terrific sound effects! "This - is - New Zealand" Boing! Fanfare etc plus the oomchukker bird (?) introduced Harry Burton and the Wellington group. Harry has finished a 405 line sync generator, and by now should be "making a hole in 420 Mc/s". Bing Fury was to build a 625 line sync gen, Mark King is the testgear man, and Graham Goodger completes the group. At Auckland ZL1QS added a description of the TV tx already described in "CQ-TV" and the slide scanner using an MC13-16 Philips tube. The t/cine unit employing a staticon should now be working, and George Wynn's 1846 iconoscope should also be running. ZL1AU asks for skeds with ATV men on 15 or 20m fone/cw.

In Birmingham, George Flanner G3KBA/T has the staticon running, and the Club camera is well on the way. Preparations are well advanced for the Scout Jamboree demonstration in August. Geoff Hill is now G3DFL/T, and with Ernie Foulds is able to send still pictures to anywhere in Birmingham. Ian Waters G3KND/T is kept very busy professionally, but is carrying out tests with Mike Soames in March. Mike has a Test Card C monoscope (henceforth "T.C.C."), and may be persuaded to go /T.

Ivan Howard G2DUS/T has moved back to his old QTH at Stotfold, Herts, a slightly inferior VHF site, so his regular picture sessions with G3KND/T have not yet been resumed. The 64 ele TV aerial suffered in the move, but Ivan is back on 160m, 2m and 70cms. He has built a colour wheel unit for receiving the BBC NTSC pictures, and it is switchable to Grant Dixon's standards - 300 line 100 fields. The GFS colour camera is proceeding, and the staticon t/cine is being adapted for colour. (How about those staticon circuits, cm?).

J.Pye VQ4FYE is the third Kenya BATC member, but as yet the PMG there will not permit TV transmission. J.P is another ex 30 line disc type from the early days. A.J.Newman (Wembley Park) is building an FSS, and wants to meet members in Wembley and also in Manchester, where he is at the University. Gordon Sharpley is with Granada in Manchester, and is playing with 723A/Bs on 3cms; he is G3LES.

G.Chatley is now G3LOS/T, and wants to meet BATCs in Enfield. He has an FSS, pulser, G8SK tx, and a colour TV set so big that he cannot get into the workshop! J.Brown G3LFB/T takes over from G5Z/T as the most remote ATV station. At Penryh he is a few miles from Lands End, and a long way from 5ZT. D.Whitehead is the first GW TV station; he is at Llandudno and is GWFDFZ/T, and wants to co-operate with anyone in the area - and Bill Stapleton! That is three new /Ts in a row. Freqs please. GWFDFZ at Rhyl is also going to look for Bill in Dublin.

In Chelmsford, Roy Martyr has finished his pulser using 55 12AT7s (!); the counting is done by binaries, and the whole unit is built to full professional standards. Roy has a couple of 5ZP16 FSS tubes with burns to build a slide scanner; by using the proper tubes he hopes to be able to keep the size down. Martin Lilley's scanner uses an MW

14-16 as scanner (actually an old Pye TV set), the 951A amplifier shown in the booklet, and another TV set as monitor. BBC is fed to each to keep them in sync, and an outboard amplifier on the latter feeds the tube cathode directly. Very good results are obtained without any lenses, and the signal to noise is exceptionally good; the 951A runs between +250 and -300V, and the power supplies are unstabilised. Jack Terry and Mike Barlow both now have Vidicons, and are proceeding with the constructional side. Jack's will be used for colour work. BATC type scanning coils are to be used both in the camera and in the viewfinders, which will use MW5-2 2½" projection tubes run at only 5kV (if we can get 'em). As G3CVO now has a Morris Minor, the studio has been dismantled and re-assembled at Bishops Stortford. G3KOK/T and G3KWW hope to be able to put up a passive reflector to enable them to transmit TV in spite of an impossible VHF site. G5CUH and G3KJY are having converter trouble, but hope to receive G3CVO/T by the time the camera is complete. To help out with the TV DX, G5KG at Danbury, one of the best VHF sites in the country, has kindly offered to help with aerials and power, so G3CVO/T should be active from there during the summer. It should be perfectly easy to put signals into Romford (aerials and converters ready), G5CTS/T (Norwood), Ely and possibly Birmingham. A spell of good conditions should enable cross-Channel contacts to be made, but as G3CVO is off in November, get the gear ready NOW please.

At Romford, G3AJW has everything planned for the Dagenham Show on July 13-14. The BATC will have a marquee to itself, and at least two cameras, possibly five and one in colour. As many BATCs as possible are invited to come along. Admission will be 1/6 on the day, but are only 1/- if you write immediately to G3AJW. Amongst those definitely coming are the Romford and Chelmsford groups, some from S. London and Cambridge, John Adams and many of the regulars. Vidicon, Staticon and monoscopes will be in action, and possibly an "OB Unit".

Janko Vasilic in Belgrade finds difficulty in obtaining TV parts, but the new TV service may alter that. He has ordered a 5527, a 6198 vidicon and an MW5-2. He has been radiating vertical and horizontal bars from a pattern generator, using a 5 watt transmitter, and hopes to have live pictures on the air by the autumn. He recommends "Handbook of Basic Circuits" by Mandl, and "Closed Circuit and Industrial Television", by Noll. Both are published by Macmillans, and the latter, costing 35/-, describes 5527 and vidicon closed circuit cameras in detail. Alwyn Stockley, your Hon. Treasurer, is now G3ENK/T, and reports that the local group there hope to have both 5527 and staticon cameras running soon. Ross Neal (Oshawa, Ont.) says he has "some" gear built, but does not give details. VE2AKT, VE2AFM and W2GJR/VE2 are hotting things up in Canada. Mike Cox is rebuilding his TCC monoscope; M. Harrison (I.o.M) is building a slide scanner.

Raymond Greenfield (Southend) is progressing with his studio equipment. The 45 Mc/s. R.F. distribution unit is crystal controlled, 5Mc/s. x9 and grid modulated. The new pattern generator is on loan to G3INY/T. Further information would be welcome on an easy way to obtain plenty of drive on 430 Mc/s, trebling from 144. He is also using a 3.5 Mc/s sub-carrier for the sound channel. awtb.

#### NEW MEMBERS

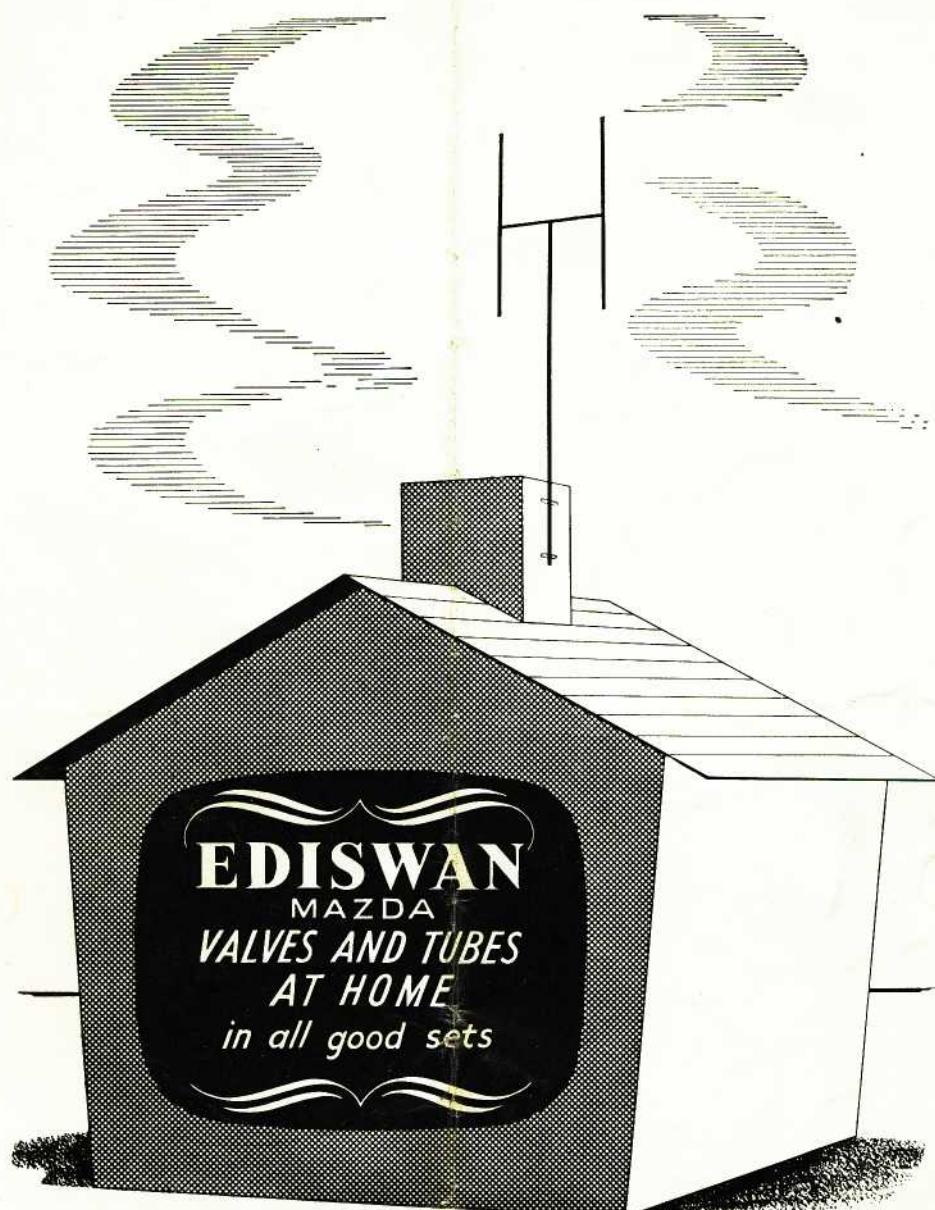
G. Alexander	7 Gladstone Ave, Manor Park, El2.
J. Brown G5LFB/T	The Waterworks, Penryn, Cornwall.
E.C. Cosh G2DDD	29 Beach Rd, Littlehampton, Sussex.
M.J. Chaney	Brooklands, London Rd, Chelmsford.
P.F. Cone G5LCD	1 Mardale Ave, Withington, Manchester 20.
J.H. Fisher	2 St Johns Close, Hall Rd, Norwich.
R.F. Grayebrook	The Vineyards, Gt. Baddow, Essex.
R.Griffin	1 Rushy Lane, Sandiacre, Notts.
A.P. Harding	No.1 Forces Broadcasting Station, Tripoli, BEPO 57.
D.C. Hodges	154 Galton Rd, Bearwood, Smethwick Birmingham.
K.Jackson	Millfield, High Wycombe, Sawbridge-worth, Herts.
A.H. Lambriex PAoLAM Veurseweg 66, Voorschoten, N'ld's.	
A.J. Newman	19 May Fields, Wembley Pk, Middx.
G.Podmore	14 Rosemary Bldgs, Silverdale, Staffs.
E.W. Rogers	P.O Box 524, Nairobi, Kenya.
E.Roberts VK9AT	Posts & Telegraphs, RIC Office, Lae, New Guinea.
R.A.Simon	18 Queens Rd, Gillingham, Kent.
K.F.Smith	6 Crossroad, Chadwell Heath, Essex.
N.L.Smith ZC4NS	Civ. Wing, 2 Wrls Regt, R.Signals, BEPO 53 Cyprus.
A.Stacey	292 St. Michaels Ave, Yeovil.
A.R.Truman ZL1UZ	35 Aroha Ave, Mt Albert, Auckland, N.Z.
S.A.Wastie	54 Cumnor Rd, Wootton, Boars Hill, Oxford.
Z.A.Wojtowicz	14 Gloucester Ave, Chelmsford. 545.

#### Changes of Address:

J.E.Chalwin 237 Beehive Lane, Chelmsford; A.R.Ryles 15 Lancaster Rd, St. Albans, Herts; G.O.Hill GSDFL/T 18 Lightwoods Hill, Bearwood, Smethwick 41, Birmingham; E.Lawley 8 Linzee Rd, Hornsey, N8; R.Smalley G5LJ0/T 8 Windermere Rd, Carnforth, Ches; W.Wallace R.A.E Staff Hostel, Aberporth, Cards, W.Wales.

STOP PRESS: Bill Stapleton 49 Grace Park Terrace, Drumcondra Dublin Eire has recorded pictures on tape. He is using 100 lines per second, and one field every two seconds, using a 10kc/s bandwidth recorded at 15 inches/sec. A SFP7 is used as scanner and for playback; p-p K766a drive line and field scan coils directly as transformers and coupling Cs won't work at 0.5c/s - anyone with a few spare power transistors please contact Bill. He finds a scan from bottom to top is preferable as otherwise the bright scanning line attracts the eye too much from the afterglow picture. The loss of DC component and LF distortion in the tape recorder are a nuisance, especially as you cannot clamp effectively when the line pulses only occur every 1/100th of a second! Nevertheless this is a splendid effort, Bill, and we all congratulate you. TV tapes will be sent out as soon as Bill gets the bugs ironed out.

Naturally enough, G3CVO is making enquiries as to /T activity in Canada, and has so far found one station in Montreal, with several others interested. The gear is now switchable to 525 lines, and with the addition of the odd 21" tv set (\$1 per inch...) should be active as soon as he gets installed suitably. W6NTS is helping with some BATC mentions in "CQ" magazine. He has a vidicon, lke and monoscope himself, and is writing up a conversion of that surplus airborne camera unit. Next mag: June-ish.



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